

Missouri Assessment Program
Spring 2002

Science

Released Items
Grade 10

Confidential

5

Fiber optics is a method by which light is transmitted through fine, flexible glass rods to communicate information.

Give one reason to use fiber optics instead of wire cables to communicate information.

Go On

Bacteria With an Attitude

For ten years, Dr. Stuart has been using the same antibiotic to treat strep throat infections. This year she became concerned because an increasing number of patients with strep throat infections were not responding to this antibiotic. She was concerned that the streptococcus bacteria, which cause strep throat, were becoming resistant to this antibiotic, resulting in a decrease in the percentage of successfully treated cases.

Dr. Stuart checked all the files of patients she had treated for strep throat infection over the previous ten years. She then compiled a table that showed the results of treatment using this antibiotic.

RESULTS OF STREPTOCOCCUS TREATMENT

Year	Number of Cases Treated	Cases Not Responding to Treatment	
		Number of Cases	Percentage of Cases (%)
1990	96	0	0
1991	104	0	0
1992	82	0	0
1993	87	0	0
1994	120	7	6
1995	92	7	8
1996	103	12	12
1997	87	13	15
1998	80	14	18
1999	57	12	21

1

Dr. Stuart's son, Randy, was looking for an idea for a science project for school, and he asked her if she had any suggestions. She showed him the data in the table on Page 2 and said, "Take a look at this, Randy. Maybe you can think of an investigation based on the questions raised by this data."

Randy contacted several other doctors and asked if they had tried treating strep throat infections with any other antibiotics. He found two other antibiotics that doctors had tried on large numbers of patients over periods of ten years or more. Using data provided by the doctors, he compared the percentage of cases successfully treated each year for all three antibiotics.

In the following questions, refer to the antibiotic that Dr. Stuart used as "Antibiotic A" and the ones that the other doctors used as "Antibiotic B" and "Antibiotic C."

Write a question that could be the basis of Randy's investigation.

What is the hypothesis for this experiment?

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2 What will be the independent and dependent variables?

Independent variable

Dependent variable

3 Identify three other variables that need to be held constant in this experiment.

1.

2.

3.

Part 2

- 26** A new species is introduced into an ecosystem. The species doubles its population every month.

- (a) Describe one possible consequence for the ecosystem if the population grows unchecked.

- (b) Describe one possible consequence for the species if the population grows unchecked.

- (c) What are two factors that may prevent the population of this new species from increasing indefinitely?

1.

2.

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